PATENT **Docket No. Clark 1-10-9-24-1**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

INVENTORS:	James C. Clark et al.	
APPLICATION NO.	10/620,527	Confirmation No. 8959
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CASE NO.	Clark 1-10-9-24-1	Group Art Unit: 2114
TITLE:	METHOD, SYSTEM AND COMPUTER PROGRAM PRODUCT FOR IMPROVING SYSTEM RELIABILITY	

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MAIL STOP APPEAL BRIEF-PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Attention: Board of Patent Appeals and Interferences

APPELLANTS' BRIEF

This Appeal Brief is in furtherance of the Notice of Appeal filed in this case on December 22, 2006. The Commissioner is hereby authorized to charge any fees that may be required, any deficiencies that may arise, and to credit any overpayment that may be owed to Appellants in connection with this Brief and application in general to Deposit Account No. 19-5425.

1. REAL PARTY IN INTEREST

The present application is assigned to Lucent Technologies, Inc. Accordingly, Lucent Technologies, Inc. is the real party in interest.

2. RELATED APPEALS AND INTERFERENCES

The Appellants, assignee, and the legal representatives of both are unaware of any other appeal or interference which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

3. STATUS OF CLAIMS

A. Claims canceled: None

B. Claims withdrawn from consideration but not canceled: None

C. Claims pending: 1-30

D. Claims allowed: none

E. Claims rejected: 1-30

F. Claims appealed: 1-30

Appealed claims 1-30 as currently pending are attached as the Claims Appendix hereto.

4. STATUS OF AMENDMENTS

A Reply under 37 C.F.R. §1.111 was filed on July 20, 2006; claim amendments were made. In response, the Examiner entered the claim amendments and issued the final Office

Action appealed herein on September 22, 2006. A Reply under 37 C.F.R. §1.116 was filed on November 22, 2006; no claim amendments were made.

5. SUMMARY OF THE CLAIMED SUBJECT MATTER

Claim 1: A method for detecting silent failures in a system, comprising the steps of: identifying an operational signature of said system, said operational signature being representative of the system when it is operating properly (Figure 2, step 202, page 8 line 25 – page 9, line 15 as well as Figure 2, step 204, page 9 lines 16-21); obtaining samples of operational service measurements (Figure 2, step 206, page 9 lines 22-26); comparing said samples with said operational signature (Figure 2, step 208, page 10 lines 1-8); and performing a corrective measure if said comparison of said samples with said operational signature indicates the probability of a silent failure of said system.

Claim 11: A system for detecting silent failures in a system, comprising: means for identifying an operational signature of said system, said operational signature being representative of the system when it is operating properly (Figure 2, step 202, page 8 line 25 – page 9, line 15 as well as Figure 2, step 204, page 9 lines 16-21); means for obtaining samples of operational service measurements (Figure 2, step 206, page 9 lines 22-26); means for comparing said samples with said operational signature (Figure 2, step 208, page 10 lines 1-8); and means for performing a corrective measure if said comparison of said samples with said operational signature indicates the probability of a silent failure of said system.

Claim 21: A machine-readable medium having stored thereon data representing sequences of instructions, the sequences of instructions which, when executed by a machine, cause the machine to perform detection of silent failures in a system using subsets of instructions, comprising: a first subset of instructions for identifying an operational signature of said system, said operational signature being representative of the system when it is operating properly (Figure 2, step 202, page 8 line 25 – page 9, line 15 as well as Figure 2, step 204, page 9 lines 16-21); a second subset of instructions for obtaining samples of operational service measurements (Figure 2, step 206, page 9 lines 22-26); a third subset of instructions for comparing said samples with said operational signature (Figure 2, step 208, page 10 lines 1-8); and a fourth subset of instructions for performing a corrective measure if said comparison of said samples with said operational signature indicates the probability of a silent failure of said system (Figure 2 step 214, page 11 lines 6-15).

In accordance with the present invention, operational characteristics of a system are identified during normal operations and data pertaining to these characteristics are gathered and stored, to create an operational signature of the system which is compared with samples of operational service measurements being measured during operation everyday operation of the system. Deviations in these signatures are then used to diagnose any errors or silent failures in the system.

6. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Appellants request the Board to review the following rejections:

1. Rejection of Claims 1-30 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent Application Publication No. 2004/00575536 to Kasper, II et al. in view of U.S. Patent No. 6,513,131 to Kanekawa et al.

7. ARGUMENT

The Cited Art Does Not Render the Claims Obvious

The Examiner Has Not Established a P*rima Facie* Case of Obviousness

As set forth in the MPEP:

> To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skilled in the art, to modify the reference or to combined reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. MPEP 2143

The present invention provides a method whereby operational parameters associated with the operation of a system, such as number of calls being made in a telephone system during a particular time, are monitored both in a correctly operating status and then in an ongoing status, and comparisons are made to see if there is a difference between the operational signature representing the operation of the device when it is working properly and the current operational parameters. The claims specifically recites these novel elements, neither taught nor suggested by the cited art, as specifically recited by independent claim 1:

> identifying an operational signature of said system, said operational signature being representative of the system when it is operating properly;
> obtaining samples of operational service measurements;
> comparing said samples with said operational signature; and
> performing a corrective measure if said comparison of said samples with said operational signature indicates the probability of a silent failure of said system.

This citation illustrates three main components of the present invention: (1) identify an operational signature of the system when the system is operating properly; (2) obtain current operational measurements and compare these operational measurements to the normal operational signature; and (3) perform any necessary corrective measures.

In their response to Applicant's arguments in the final Office Action dated September 22, 2006, specifically the argument that Kasper in view of Kanekawa fails to teach detecting failures in a system, the Examiner states:

> "First, Examiner would like to bring Applicant attention to Kasper's apparatus and method for ***detecting failure*** and improving signatures from data stream via determining, comparing and executing processes as depicted in figures 2-3, abstract, col. 1 par. 0004-0006; col. 2, par. 0016; and col. 4, par. 0029. Kasper further explicitly teaches data/signature comparison process/flow via match/mismatch and ***detected functionalities in determining failure signature*** [col. 2, par. 0016 and col. 6, claim 1]. It is clearly that Kasper explicitly disclosed data/signature failure detection and recovery process via the signature comparison and management in figures 2-3. Kasper clearly demonstrated the ***applicant's detecting failures in a system*** limitation."

In this citation, the Examiner states multiple times that Kasper teaches detecting failures. Upon a complete review of Kasper, both the portions cited by the Examiner and not, Applicant respectfully disagrees with the Examiner. Kasper is a sequence detector which is specifically utilized to identify a particular numerical sequence occurring in a data stream. Kasper is limited to analyzing

numerical patterns and looking for patterns that match a predetermined pattern. This predetermined pattern is different from component (1) as discussed above. The predetermined pattern is merely a value expected to be attached to an input data string as a means for identifying the sender of the data string. The predetermined pattern is not an operational signature indicating normal performance of a computer system as is specifically claimed in the present invention.

Additionally, nothing in Kasper teaches or suggests detecting failures in a system; rather, Kasper is merely detecting patterns within a data signal and then causing an action to take place dependent upon which pattern has been detected.

Paragraph [0016], cited by the Examiner on numerous occasions, recites:

> "Embodiments of the present invention utilize an improved apparatus and/or method to correlate multiple signature patterns in an input datastream by utilizing a multiple sequence indexing correlator. Multiple sequence indexing correlators are indexing correlators that can match multiple signature patterns at once, utilizing the above indexing correlator apparatus and/or methodology. In a multiple sequence indexing correlator multiple signatures are matched/correlated at a single time to an input datastream."

Here, the basic functionality of the system taught by Kasper is explained. Received signatures are correlated and compared to stored signatures to find repeated signature segments. These correlation results are merely used to identify patterns in received data, not to detect failures. This differs greatly from component (2) as discussed above. The received signatures in Kasper are not indicative of operational service measurements as is claimed in the present invention.

Additionally, the Examiner cites Figures 2 and 3 as teaching detecting system failures (while failing to particularly point out any specific step where failure detection occurs). Upon review of both Figures 2 and 3, and the accompanying detailed description, there is no discussion of detecting

system failures based upon signature comparison and performing corrective measures if a failure is detected, as is specifically claimed in the present invention. The only steps in either Figure that deal with a signature comparison are not used to detect failures, but rather to identify portions of the data streams that do not repeat previously transmitted signatures. Thus, component (3) of the present claimed invention is completely absent from Kasper as no corrective measures are taken in response to a probable silent failure indication.

The Examiner looks to Kanekawa for an alleged teaching of silent failures, however, Kanekawa fails to teach or reasonably suggest the presently claimed limitations that Kasper fails to teach, specifically identifying an operational signature of said system, said operational signature being representative of the system when it is operating properly; obtaining samples of operational service measurements; comparing said samples with said operational signature; and performing a corrective measure dependent upon the results of the comparison step.

Without such a teaching or suggestion of these limitations, the combination proposed by the Examiner is inappropriate for a rejection under 35 U.S.C. §103. Accordingly, the Board is respectfully requested to reconsider and withdraw the rejection of Claims 1-30 over Kasper in view of Kanekawa.

8. CONCLUSION

For the foregoing reasons Appellants respectfully request this Board to overrule the Examiner's rejections and allow Claims 1-30.

Respectfully submitted,

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Date

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CLAIMS APPENDIX

CLAIMS INVOLVED IN THIS APPEAL:

1. (Original) A method for detecting silent failures in a system, comprising the steps of:

identifying an operational signature of said system, said operational signature being representative of the system when it is operating properly;

obtaining samples of operational service measurements;

comparing said samples with said operational signature; and

performing a corrective measure if said comparison of said samples with said operational signature indicates the probability of a silent failure of said system.

2. (Original) The method of claim 1, wherein said system comprises a processing system having at least one Active Unit (AU) and at least one Standby Unit (SU), and wherein said step of performing a corrective measure comprises at least the steps of:

automatically activating said at least one SU if said comparison indicates that a silent failure has occurred with respect to said at least one AU.

3. (Original) The method of claim 2, wherein said step of performing said corrective measure further comprises at least the step of:

automatically initiating an alert indicating that a silent failure of said system is probable.

4. (Original) The method of claim 3, wherein said alert process comprises automatically

communicating with a technician electronically.

5. (Original) The method of claim 1, wherein said identifying step comprises at least the steps of:

monitoring said system during an index period to obtain a set of index service measurements;

evaluating said index service measurements and determining said operational signature based on said index service measurements.

6. (Original) The method of claim 5, wherein said identifying step is instituted during a period when said system is actively online.

7. (Original) The method of claim 5, wherein said identifying step is instituted during a period when said system is not actively online.

8. (Original) The method of claim 7, wherein said index service measurements are updated at predetermined times to incorporate said operational service measurements therein.

9. (Original) The method of claim 1, wherein said system comprises a telecommunications system that includes a call processing function, said operational characteristics comprising:

call requests; and

successful call requests.

10. (Original) The method of claim 1, wherein said system comprises a telecommunications system that includes a mobility function, said operational characteristics comprising:

attempted handovers;

successful handovers; and

paging requests.

11. (Original) A system for detecting silent failures in a system, comprising:

means for identifying an operational signature of said system, said operational signature being representative of the system when it is operating properly;

means for obtaining samples of operational service measurements;

means for comparing said samples with said operational signature; and

means for performing a corrective measure if said comparison of said samples with said operational signature indicates the probability of a silent failure of said system.

12. (Previously presented) The system of claim 11, wherein said system comprises a processing system having at least one Active Unit (AU) and at least one Standby Unit (SU), and wherein said means of performing a corrective measure comprises:

means for automatically activating said at least one SU if said comparison indicates that a silent failure has occurred with respect to said at least one AU.

13. (Previously presented) The system of claim 12, wherein said means of performing said corrective measure further comprises:

means for automatically initiating an alert indicating that a silent failure of said system is probable.

14. (Original) The system of claim 13, wherein said alert process comprises means for automatically communicating with a technician electronically.

15. (Previously presented) The system of claim 11, wherein said identifying means comprises:

means for monitoring said system during an index period to obtain a set of index service measurements;

means for evaluating said index service measurements and determining said operational signature based on said index service measurements.

16. (Previously presented) The system of claim 15, wherein said identifying means is instituted during a period when said system is actively online.

17. (Previously presented) The system of claim 15, wherein said identifying means is instituted during a period when said system is not actively online.

18. (Original) The system of claim 17, wherein said index service measurements are updated at predetermined times to incorporate said operational service measurements therein.

19. (Previously presented) The system of claim 11, wherein said comparing means is performed using hypothesis testing.

20. (Previously presented) The system of claim 11, wherein said comparison means is performed using change-point detection.

21. (Previously presented) A machine-readable medium having stored thereon data representing sequences of instructions, the sequences of instructions which, when executed by a machine, cause the machine to perform detection of silent failures in a system using subsets of instructions, comprising:

a first subset of instructions for identifying an operational signature of said system, said operational signature being representative of the system when it is operating properly;

a second subset of instructions for obtaining samples of operational service measurements;

a third subset of instructions for comparing said samples with said operational signature;

and

a fourth subset of instructions for performing a corrective measure if said comparison of said samples with said operational signature indicates the probability of a silent failure of said system.

22. (Previously presented) The machine-readable medium of claim 21, wherein said machine-readable medium comprises a processing system having at least one Active Unit (AU) and at least one Standby Unit (SU), and wherein said fourth subset of instructions comprises:

a fifth subset of instructions for automatically activating said at least one SU if said comparison indicates that a silent failure has occurred with respect to said at least one AU.

23. (Previously presented) The machine-readable medium of claim 22, wherein said fourth subset of instructions further comprises:

a sixth subset of instructions for automatically initiating an alert indicating that a silent failure of said system is probable.

24. (Previously presented) The machine-readable medium of claim 23, wherein said sixth subset of instructions comprises a seventh subset of instructions for automatically communicating with a technician electronically.

25. (Previously presented) The machine-readable medium of claim 21, wherein said first

subset of instructions comprises:

a fifth subset of instructions for monitoring said system during an index period to obtain a set of index service measurements;

a sixth subset of instructions for evaluating said index service measurements and determining said operational signature based on said index service measurements.

26. (Previously presented) The machine-readable medium of claim 25, wherein said first subset of instructions is instituted during a period when said system is actively online.

27. (Previously presented) The machine-readable medium of claim 25, wherein said first subset of instructions is instituted during a period when said system is not actively online.

28. (Previously presented) The machine-readable medium of claim 27, wherein said index service measurements are updated at predetermined times to incorporate said operational service measurements therein.

29. (Previously presented) The machine-readable medium of claim 21, wherein said third subset of instructions is performed using hypothesis testing.

30. (Previously presented) The machine-readable medium of claim 21, wherein said third subset of instructions is performed using change-point detection.

EVIDENCE APPENDIX

No additional evidence is presented.

RELATED PROCEEDINGS APPENDIX

No related proceedings are presented.